

REMARKS

In response to the objection to Claim 1, as set forth in paragraph 3 of the Office Action, Applicants have amended Claim 1 in the manner suggested by the Examiner. Accordingly, reconsideration and withdrawal of this ground of rejection are respectfully requested.

Claims 1, 3, 10 and 11 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Zepp et al (U.S. Patent No. 6,880,229) in view of Abukawa et al (U.S. Patent No. 6,313,558) and further in view of Umeda et al (U.S. Patent No. 6,124,660). However, for the reasons discussed hereinafter, Applicants respectfully submit that all claims which remain of record in this application distinguish over the cited references, whether considered separately or in combination.

The present invention is directed to an epicycloidal motor which has a stator core that is formed by a combination of multiple split core pieces with a stator winding conductor being wound in slots of the stator core. In particular, each of the split core pieces is in the form of a tee, which includes a tee base, a tee column extending radially from the tee base, and a tee flange which extends in a circumferential direction on both sides of a the tee column. In the structure according to the present invention as defined in the claims, it is important to note that the tee bases collectively form the split core pieces which, when

assembled in the manner shown in Figures 1a and 1b, together form the stator core. Accordingly, because the stator core is made up of the respective tee bases which are mounted peripherally adjacent around the interior of the stator, it is unnecessary for the housing ring 1 (Figure 1a) to be made of a magnetic material. In fact, the housing ring 1 itself is made of a nonmagnetic material, as discussed in the specification at paragraph 22 on pages 10 and 11. In particular, the housing may be made of aluminum, an aluminum alloy, a zinc alloy or magnesium. Accordingly, the housing ring 1 does not constitute part of the magnetic circuit, or part of the stator core itself, which is provided by the tee bases adjacent split core pieces.

In Zepp et al, on the other hand, the core, which is part of the magnetic circuit, is designated by the numeral 2 and 2', and is made of a single piece, not being split. Thus, for example, the specification states at Column 4, line 61, that "The stator ring used in the present invention can be made using a stack of thin steel laminations that contain slots having female shape of the primary and secondary locating structures." (See also Column 5, lines 41-45.) It should be noted in this regard, that the stator core formed by the stack of thin steel laminations has slots 12 into which the stator teeth 10 are fitted. Nevertheless, the core itself, which is formed by the laminated steel plates and designated by the reference numerals 2 and 2' in Zepp et al is provided in the form of a single (laminated) piece.

The third paragraph in the body of Claim 1 of the present application has been amended to recite that the cylindrical housing, which bears all of the respective tees that collectively make up the stator core, is made of a nonmagnetic material. This feature is also neither taught nor suggested by Zepp et al, in which, as noted previously, the stator ring 2, 2' is made of laminated steel plates.

Using a nonmagnetic housing ring 1 made of a nonmagnetic material as disclosed and claimed in the present application permits the core pieces to be pressed together by shrink fitting as described in the specification at paragraph [0022]. The tee base (21) is connected with the cylindrical housing 1 so that they are pressed together after the shrinkage fitting, so as to form the cores from the adjacent tee bases, as noted previously. The Zepp et al reference teaches no such structure. The Abukawa et al reference, on the other hand, has been cited only as showing flat inclinations (26) arranged on both ends of the outer periphery of the stator magnetic poles. Umeda et al, on the other hand, has been cited as showing the ratio of an overall effective area of the conductor to an effective sectional area of the slot in the range of 0.5 to 0.8. Insofar as Applicants have been able to determine, neither such reference teaches or suggests those features of the invention which are missing in Zepp et al, as described above. Accordingly, a combination of all three references does not replicate the present invention.

In light of the foregoing remarks, this application should be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #056207.52601US).

Respectfully submitted,

A handwritten signature in cursive script, reading "Gary R. Edwards", written over a horizontal line.

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